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Original communication

Suicide in India – A four year retrospective study

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Abstract

Suicide is one of the ten leading causes of death in the world, accounting for more than a million deaths annually. The purpose of the study was to identify the risk groups. In the four-year period from January 2000 to December 2003, 588 suicide victims were autopsied. Information was obtained by interviewing the acquaintances of the victim, perusal of hospital records and the autopsy findings. All the cases were analyzed as to sex, age, and methods of suicide, seasonal variation, diurnal variation and other sociological aspects. The present study depicts a suicidal rate of 11.76 per 100,000 population. Males and females were almost equally the sufferers. The largest number of victims were found in the age group of 21–30 years. Hanging and poisoning constituted the two major modes of suicides (63%). Majority of the victims were mentally sound, married and were from rural background. Victims were mostly drawn from low socioeconomic status (48%). Less educated or illiterates were usually the victims. Suicidal note was detected in 5% of cases. Suicidal tendency and alcohol intake could not be encountered in most of the cases. Indoor incidence was almost double of the outdoor incidence, mostly seen in rainy season (43%) and occurred almost equally during day and night. Financial burden (37%) and marital disharmony (35%) were the principal reasons for the suicide.

Keywords: Suicide; Autopsy; Marital disharmony; Victims

1. Introduction

Suicide is a complex phenomenon associated with psychological, biological and social factors involving by and large every corner of the world. It is distinctively a human affair and continues to be a major public health issue. The phenomenon of suicide is as old as mankind, but still remains an unsolved gigantic problem. It is an enigma as to why life-caring human beings turn to self-destruction. The incidence and pattern of suicide vary from country to country. Cultural, religious and social values play some role in this regard. As per WHO, there is one suicidal death in 40 seconds throughout the world and there is an increase of suicidal rate by 60% worldwide during the last 50 years. So also in India as per the report of NCRB (National Crime Records Bureau, 1999), there is one suicide every 5 min, and there has been an increase of 175% of suicidal rate in the last three and half decades in spite of the fact that suicide is still considered a crime under 309 Indian Penal Code.

Although quite a good number of authoritative works in this regard have already been done in other parts of India,[1] in other regional countries like Pakistan,[2] Singapore[3] and in western countries like South Carolina, USA,[4] Cork city,[5] Geneva,[6] Mexico,[7] Austria,[8] Georgia,[9] England and Wales,[10] etc., no work in this field has been undertaken so far in this locality. Keeping in view the magnitude of this problem, the present study has been taken up with an aim

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to identify the vulnerable victims, their age, marital status, mental status, socioeconomic status and educational background. In addition to this the risk factors like seasonal distribution, diurnal variation, location of crime, reason behind the crime and methods used for suicide were also recorded. The data collected were compared with that of the previously published literature.

2. Materials and methods

This study was undertaken retrospectively over a period of 4 years in the Department of Forensic Medicine and Toxicology, M.K.C.G. Medical College, Berhampur, India, from January 2000 to December 2003.

This center receives cadavers from the whole of Berhampur city and the adjacent rural areas of the southern part of Orissa comprising an approximate population of 2,500,000. Out of the 2096 medico-legal postmortems performed during the above-mentioned period, 588 cases were of suicidal death, which constitute the materials for study. A few doubtful cases of suicide where the cause of death could not be ascertained due to insufficient/improper history, gross decomposition and inadequate findings, etc., were not included. Each suicidal case was examined, evaluated at autopsy both externally and internally and analyzed for different sociological aspects in predesigned proforma. Apart from this, information regarding circumstances was obtained by interviewing the accompanying investigating officer, the acquaintances of the victims, and examination of the scene of crime. Simultaneously hospital records were also reviewed, if the victims were treated prior to death. In the present study all cases of unnatural deaths i.e., accident, suicide, homicide and sudden death constitute medicolegal post-mortem.

Features like extramarital affair, large family, drug addiction commonly alcohol, ill-treatment by in-laws and disease/disability of family members were taken into account while assessing marital disharmony.

In the present study, socio-economic status of the victims were categorized into three categories, depending on the income per family per year i.e. up to Rs. 50,000/as lower, Rs. 50,001/ to Rs. 1,50,000/as middle and more than Rs. 1,50,000/as upper.

2.1. Statistical analysis

The data collected were analyzed by chi-square (χ^2) test. The expected frequency calculated from the available data or taken as equal distribution and $p \leqslant 0.05$, was applied as statistically significant, indicating that the frequency of observation is not homogeneous.

3. Result

Out of the 2096 cases of total autopsies, 588 cases were suicides (28%). Suicidal death rate of 11.76 per 100,000 populations was encountered. Males and females were almost equally the sufferers ($p>0.05$) (Fig. 1). The commonest age group of the victims was in between 21 and 30 years ($p < 0.001$) (Fig. 2). Hanging (32.6%) and poisoning (30.6%) were the two most common methods adopted by the victims for committing suicide ($p < 0.001$) (Table 1). Among all the cases of poisoning, organophosphorous poisoning was the most commonly used method for suicide in both males and females. Native plant poisoning (11%), corrosive acid (8.8%), rodenticide (6.6%) and phenyl (2.2%) were the other poisoning cases. Only 6% of the victims were of unsound mind. As $p < 0.001$, unsoundness of mind is not related to the crime. People of rural areas (50%) and mostly married (71%) were the usual sufferers ($p < 0.001$). Less educated or illiterate and those belonging to low socio-economic status were the vulnerable victims ($p < 0.001$) (Table 2). The victims were mostly Hindu (93.5%) by religion. In 28 cases suicidal note was detected. History of suicidal tendency (14%) and intake of alcohol (22%) could be encountered. Indoor incidence of the crime is significantly more

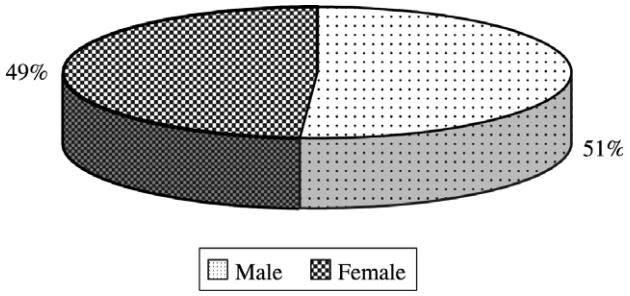

Fig. 1. Sexual variation of the victims.

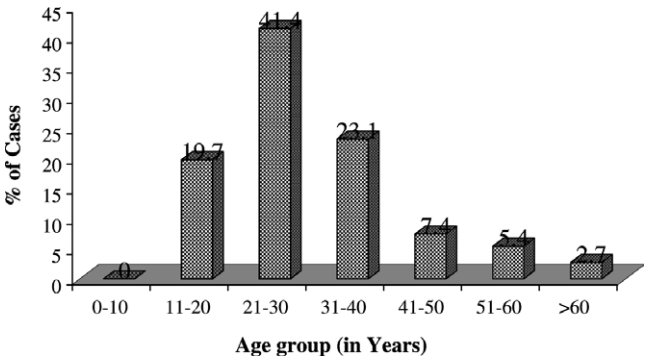

Fig. 2. Age distribution.

Table 1
Methods of suicide

Methods	No. of cases	Percentage (%)
Hanging	192	32.6
Poisoning	180	30.6
Burn	108	18.3
Railway run over	100	17
Drowning	8	1.3
Total	588	100

$\chi^2 = 92.87$, df = 4, $p < 0.001$

Table 2
Sociological aspects of the victims

	No. of cases	Percentage (%)
Mental status		
Sound	552	93.8
Unsound	36	6.2
Total	588	100
$\chi^2 = 25.49$, df = 1, $p < 0.001$		
Marital status		
Married	420	71.4
Unmarried	168	28.6
Total	588	100
$\chi^2 = 54.0$, df = 1, $p < 0.001$		
Area distribution		
Rural	288	48.9
Semi-urban	156	26.6
Urban	144	24.5
Total	588	100
$\chi^2 = 32.57$, df = 2, $p < 0.001$		
Socio-economic status		
Higher	92	15.7
Medium	212	36
Low	284	48.3
Total	588	100
$\chi^2 = 48.09$, df = 2, $p < 0.001$		
Educational status		
Higher	92	16
Primary	224	38
Illiterate	272	46
Total	588	100
$\chi^2 = 44.33$, df = 2, $p < 0.001$		

than outdoor incidence ($p < 0.001$). For simplicity of calculation, 0.7% of unknown place of occurrence was taken as outdoor incidence (Fig. 3). Mostly the victims did commit suicide in rainy season (43%) irrespective of day or night. Financial burden (37%) followed by marital disharmony (35%) constituted the two major causes of suicide ($p < 0.001$) (Fig. 4).

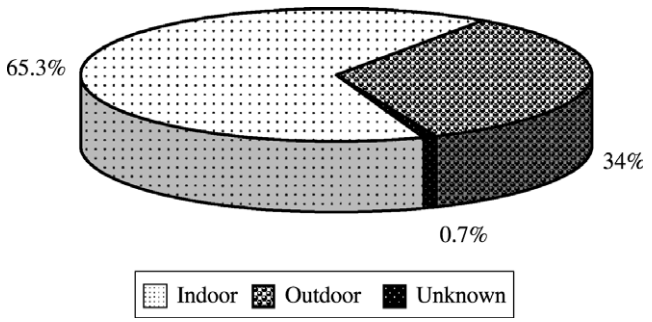

Fig. 3. Place of occurrence.

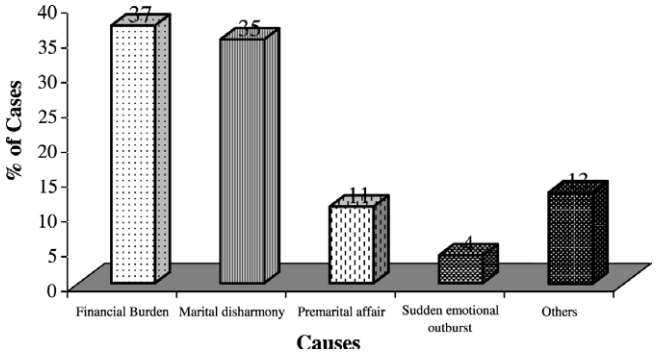

Fig. 4. Causes of suicide.

4. Discussion

Deaths by suicide are a challenge to investigate. As death investigators, it is necessary to be aware of the common scenario, risk factors, methods and victims, as well as pitfalls that may be encountered. Only with thorough analysis and investigation specifically tailored to each case, the proper cause and manner of death can be certified.

In the current study, about 28% of all cases which came for medico-legal autopsy constituted suicides. At par with the national suicidal rate (11.2/100,000), our study reveals a suicidal death rate of 11.76/100,000 populations, which is slightly low in contrast to the annual global death rate (14.5/100,000). Besides some isolated cases of Christians, almost all the victims belonged to the Hindu religion. Not a single case from the Muslim religion could be encountered. ''Upanishads'', the Holly scriptures of Hindus had condemned suicide and stated that 'he who takes his own life will enter the sunless areas covered by impenetrable darkness after death'. But the ''Vedas'' permitted suicide for religious reasons. It viewed that the best sacrifice, that could be made was one's own life.[11] The reason being most of the population of this locality belongs to the Hindu religion. Males constituted 51% (300) while 49% (288) were females, the ratio being 1.04:1. This finding contradicts the all India figure (1.4:1),[1] so also in other regional countries like Thailand[12] and Hong Kong.[13] Studies in other parts of the world also showed male predominance in suicides like in Cork City,[5] in South Carolina, USA[4] and in Geneva.[6] A study in England and Wales suggests that there is an increase in the rate of suicide in both sexes but greater in males.[10] The reasons being that the population of males are higher than that of females worldwide. The present study shows that the people of all age groups were involved. The highest incidence was amongst the 21–30 years followed by 31–40 years. This observation was identical with the available literatures.[2,3,5,12] This is expected, as this age group comprises the majority of the population. But a study in Japan,[14] Mexico[7] and in South Carolina, USA,[4] revealed the age group of over 65 years was common, which were the least sufferers in our study. Hanging is the most common method adopted by the victims (32.6%) for suicide followed by poisoning (30.6%).

The reason attributed for this is the easy availability of the ligature material and the poisons. Among the poisoning cases, organophosphorus poisoning was the most commonly used method for suicide, which is in contrast to the findings observed in England and Wales,[10] wherein vehicle exhaust gas has been commonly used and carbon-monoxide poisoning was common in Japan.[14] Similar findings have also been observed in India[1] and in other countries.[2,8,15] Out of all the cases of suicide, not a single case of suicidal death either by fall from height or by firearm could be encountered in the present study, though these methods are widely used in other countries.[4,9,16,17]

In contrast to the statistics that mental illness is a predominant cause (90% as per WHO statistics, 51% as in Singapore[3] and 64.5% as in Wolver Hampton,[18]) we observed only 6.2% of all suicidal cases had mental illness. The reason may be reluctance by the people of this locality to attend a clinic for simple psychiatric complains.

Our study predicts marriage as being one of the very important risk factors for suicide. 417 cases out of 588 cases (71%) were married which is almost similar to the findings observed in other parts of India (65%).[1] The reason for more suicides in married ones may be linked to the two most common causes of suicides (marital disharmony and financial burden), which has been detailed later. But in Thailand[12] similar incidences of suicides among both married and unmarried have been observed. Among the entire victims, almost 50% belonged to rural areas, whereas the rest 50% are almost equally divided between semi-urban and urban areas. Similar findings have also been observed in England and Wales.[10] Illiteracy and low socio-economic status are the two major factors (46–48%) responsible for committing the offence. This has also been observed in other parts of India and abroad. Out of all the cases only about 5% of cases left a suicide note, which is much less in comparison to the finding observed in South Carolina, USA.[4,19] This may be attributed to higher percentage of illiteracy. In 82 out of 588 cases (14%) suicidal tendency could be encountered. This finding is consistent with the findings observed in South Carolina, USA (13%).[19] In other regional countries like Thailand[12] and Singapore[3] suicidal tendency was found in 17% and 20% of cases, respectively.

In the present study, 22% of the cases were alcoholics. In contrast to our finding a high proportion of cases was found to be intoxicated with alcohol in South Carolina, USA[4] and in England.[20] Indoors incidence was encountered in 65% of the cases, which is slightly lower than that observed in South Carolina, USA (81%).[19] The reasons for higher indoor incidence may be attributed to loneliness, easy availability of means, and to a certain extent for the event to go unnoticed and uninterrupted by others. Although seasonal variation is not much, however the present study reveals highest number of cases in rainy season (43%), which is in contrast to the finding observed in Faisalabad,[2] where a seasonal surge was observed in spring. The reason of a relative higher incidence of suicides in rainy season in this locality could be due to the easy availability and frequent use of pesticides for cultivation during this season. In our study there was almost uniform diurnal variation with a slight increase in day light occurrence (52%), which has also been observed in other regional countries like Singapore.[3] Financial burden (37%) followed by marital disharmony (35%) are the two most common causes of suicide and is similar to previous findings.[1] Quite contrast to our findings, studies in South Carolina, USA[4] and in Japan[14] suggest dreadful diseases followed by problems of economic distress to be the two most common causes of suicide. Dreadful diseases contributed much less towards the causes of suicide in the ongoing study.

5. Conclusion

The incidence rate of suicide is increasing day by day. WHO estimates by the year 2020,one death on average every 20 seconds and one attempt of suicide every 1–2 seconds. Worldwide scenario suggests second highest number of suicidal cases in India followed by China, which is quite alarming and needs to be dealt seriously.

Although there are a number of risk factors involved or associated with suicide, the present study depicts a few. Around 30% of the deaths are due to suicide with a suicide rate of 11.76 per 100,000 populations. Younger age individuals (21–30 years) are mostly prone to commit suicide. Hanging and poisoning are the two commonly used methods for committing suicide. Mental and physical illnesses are not big hazards for committing suicide. People of all the localities, married and less educated are the usual sufferers. Employment in general is a protection against suicide. Unemployed and low-socio economic groups tend to commit suicide very often. The risk factors like suicidal tendency and intake of alcohol could not be encountered in the majority of cases. Mostly people committed suicide within the four walls of the house, during the rainy season irrespective of day and night. Financial burden followed by marital disharmony is the principal cause of suicide in this locality.

We require further epidemiological studies of this kind to disentangle more of the social and economic associations with suicidal behavior in each gender. Divert strategies are required to prevent suicide, nevertheless it is hoped that the information provided here can raise awareness and evoke interest with regard to the serious public health and community burden represented by suicide.

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